

SEQUENCE LISTING

<110> Bristol-Myers Squibb Company

<120> NUCLEIC ACID MOLECULES AND POLYPEPTIDES FOR A HUMAN CATION CHANNEL POLYPEPTIDE

<130> D0187NP

<150> US 60/257,865

<151> 2000-12-21

<160> 24

<170> PatentIn version 3.0

<210> 1

<211> 2186

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (20)..(2011)

<220>

<221> misc_feature

<222> (2150)..(2150)

<223> wherein "n" equals A, C, G, or T.

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cca gcc aat aat cac aac cat cat gca cct cct gcc atc aag gcc aat	100
Pro Ala Asn Asn His Asn His His Ala Pro Pro Ala Ile Lys Ala Asn	
15 20 25	
ggc aaa gat gac cac agg aca agc agc agg cca cac tct gca gct gac	148
Gly Lys Asp Asp His Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp	
30 35 40	
gat gac acc tcc tca gaa ctg cag agg ctg gca gac gtg gat gcc cca	196
Asp Asp Thr Ser Ser Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro	
45 50 55	
cag cag gga agg agt ggc ttc cgc agg ata gtt cgc ctg gtg ggg atc	244
Gln Gln Gly Arg Ser Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile	
60 65 70 75	
atc aga gaa tgg gcc aac aag aat ttc cga gag gag gaa cct agg cct	292
Ile Arg Glu Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro	
80 85 90	
gac tca ttc ctc gag cgt ttt cgt ggg cct gaa ctc cag act gtg acc	340
Asp Ser Phe Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr	
95 100 105	
aca cag gag ggg gat ggc aaa ggc gac aag gat ggc gag gac aaa ggc	388

Thr	Gln	Glu	Gly	Asp	Gly	Lys	Gly	Asp	Lys	Asp	Gly	Glu	Asp	Lys	Gly	
110							115					120				
acc	aag	aag	aaa	ttt	gaa	cta	ttt	gtc	ttg	gac	cca	gct	ggg	gat	ttg	436
Thr	Lys	Lys	Lys	Phe	Glu	Leu	Phe	Val	Leu	Asp	Pro	Ala	Gly	Asp	Leu	
125						130					135					
tac	tac	tgc	tgg	cta	ttt	gtc	att	gcc	atg	ccc	gtc	ctt	tac	aac	tgg	484
Tyr	Tyr	Cys	Trp	Leu	Phe	Val	Ile	Ala	Met	Pro	Val	Leu	Tyr	Asn	Trp	
140					145					150					155	
tgc	ctg	ctg	gtg	gcc	aga	gcc	tgc	ttc	agt	gac	cta	cag	aaa	ggc	tac	532
Cys	Leu	Leu	Val	Ala	Arg	Ala	Cys	Phe	Ser	Asp	Leu	Gln	Lys	Gly	Tyr	
				160					165					170		
tac	ctg	gtg	tgg	ctg	gtg	ctg	gat	tat	gtc	tca	gat	gtg	gtc	tac	att	580
Tyr	Leu	Val	Trp	Leu	Val	Leu	Asp	Tyr	Val	Ser	Asp	Val	Val	Tyr	Ile	
			175					180						185		
gcg	gac	ctc	ttc	atc	cga	ttg	cgc	aca	ggt	ttc	ctg	gag	cag	ggg	ctg	628
Ala	Asp	Leu	Phe	Ile	Arg	Leu	Arg	Thr	Gly	Phe	Leu	Glu	Gln	Gly	Leu	
		190					195					200				
ctg	gtc	aaa	gat	acc	aag	aaa	ctg	cga	gac	aac	tac	atc	cac	acc	ctg	676
Leu	Val	Lys	Asp	Thr	Lys	Lys	Leu	Arg	Asp	Asn	Tyr	Ile	His	Thr	Leu	
	205					210					215					
cag	ttc	aag	ctg	gat	gtg	gct	tcc	atc	atc	ccc	act	gac	ctg	atc	tat	724
Gln	Phe	Lys	Leu	Asp	Val	Ala	Ser	Ile	Ile	Pro	Thr	Asp	Leu	Ile	Tyr	
220					225					230					235	
ttt	gct	gtg	gac	atc	cac	agc	cct	gag	gtg	cgc	ttc	aac	cgc	ctg	ctg	772
Phe	Ala	Val	Asp	Ile	His	Ser	Pro	Glu	Val	Arg	Phe	Asn	Arg	Leu	Leu	
				240					245					250		
cac	ttt	gcc	cgc	atg	ttt	gag	ttc	ttt	gac	cgg	aca	gag	aca	cgc	acc	820
His	Phe	Ala	Arg	Met	Phe	Glu	Phe	Phe	Asp	Arg	Thr	Glu	Thr	Arg	Thr	
		255						260					265			
aac	tac	cct	aac	atc	ttc	cgc	atc	agc	aac	ctt	gtc	ctc	tac	atc	ttg	868
Asn	Tyr	Pro	Asn	Ile	Phe	Arg	Ile	Ser	Asn	Leu	Val	Leu	Tyr	Ile	Leu	
		270					275					280				
gtc	atc	atc	cac	tgg	aat	gcc	tgc	atc	tat	tat	gcc	atc	tcc	aaa	tcc	916
Val	Ile	Ile	His	Trp	Asn	Ala	Cys	Ile	Tyr	Tyr	Ala	Ile	Ser	Lys	Ser	
	285					290					295					
ata	ggc	ttt	ggg	gtc	gac	acc	tgg	gtt	tac	cca	aac	atc	act	gac	cct	964
Ile	Gly	Phe	Gly	Val	Asp	Thr	Trp	Val	Tyr	Pro	Asn	Ile	Thr	Asp	Pro	
300					305					310					315	
gag	tat	ggc	tac	ctg	gct	agg	gaa	tac	atc	tat	tgc	ctt	tac	tgg	tcc	1012
Glu	Tyr	Gly	Tyr	Leu	Ala	Arg	Glu	Tyr	Ile	Tyr	Cys	Leu	Tyr	Trp	Ser	
				320					325					330		
aca	ctg	act	ctc	act	acc	att	ggg	gag	aca	cca	ccc	cct	gta	aag	gat	1060
Thr	Leu	Thr	Leu	Thr	Thr	Ile	Gly	Glu	Thr	Pro	Pro	Pro	Val	Lys	Asp	
				335				340					345			
gag	gag	tac	cta	ttt	gtc	atc	ttt	gac	ttc	ctg	att	ggc	gtc	ctc	atc	1108
Glu	Glu	Tyr	Leu	Phe	Val	Ile	Phe	Asp	Phe	Leu	Ile	Gly	Val	Leu	Ile	

350	355	360	
ttt gcc acc atc gtg gga aat gtg ggc tcc atg atc tcc aac atg aat Phe Ala Thr Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn 365 370 375			1156
gcc acc cgg gca gag ttc cag gct aag atc gat gcc gtg aaa cac tac Ala Thr Arg Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr 380 385 390 395			1204
atg cag ttc cga aag gtc agc aag ggg atg gaa gcc aag gtc att agg Met Gln Phe Arg Lys Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg 400 405 410			1252
tgg ttt gac tac ttg tgg acc aat aag aag aca gtg gat gag cga gaa Trp Phe Asp Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu 415 420 425			1300
att ctc aag aat ctg cca gcc aag ctc agg gct gag ata gcc acc aat Ile Leu Lys Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Thr Asn 430 435 440			1348
gtc cac ttg tcc aca ctc aag aaa gtg cgc atc ttc cat gat tgt gag Val His Leu Ser Thr Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu 445 450 455			1396
gct ggc ctg ctg gta gag ctg gta ctg aaa ctc cgt cct cag gtc ttc Ala Gly Leu Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe 460 465 470 475			1444
agt cct ggg gat tac att tgc cgc aaa ggg gac atc gcc aag gag atg Ser Pro Gly Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met 480 485 490			1492
tac atc att aag gag ggc aaa ctg gca gtg gtg gct gat gat ggt gtg Tyr Ile Ile Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val 495 500 505			1540
act cag tat gct ctg ctg tcg gct gga agc tgc ttt gcc gag atc agt Thr Gln Tyr Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser 510 515 520			1588
atc ctt aac att aag ggc agt aaa atg ggc aat cga cgc aca gct aat Ile Leu Asn Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn 525 530 535			1636
atc cgc agc ctg ggc tac tca gat ctc ttc tgc ttg tcc aag gat gat Ile Arg Ser Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp 540 545 550 555			1684
ctt atg gaa gct gtg act gag tac cct gat gcc aag aaa gtc cta gaa Leu Met Glu Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu 560 565 570			1732
gag agg ggt cgg gag atc ctc atg aag gag gga ctg ctg gat gag aac Glu Arg Gly Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn 575 580 585			1780
gaa gtg gca acc agc atg gag gtc gac gtg cag gag aag cta ggg cag Glu Val Ala Thr Ser Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln 590 595 600			1828

ctg gag acc aac atg gaa acc ttg tac act cgc ttt ggc cgc ctg ctg 1876
 Leu Glu Thr Asn Met Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu
 605 610 615

gct gag tac acg ggg gcc cag cag aag ctc aag cag cgc atc aca gtt 1924
 Ala Glu Tyr Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val
 620 625 630 635

ctg gaa acc aag atg aaa cag aac aat gaa gat gac tac ctg tct gat 1972
 Leu Glu Thr Lys Met Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp
 640 645 650

ggg atg aac agc cct gag ctg gct gct gct gac gag cca taagacctgg 2021
 Gly Met Asn Ser Pro Glu Leu Ala Ala Asp Glu Pro
 655 660

ggcccaactg cctctccagc attggccttg gccttgatcc cagaagctag aggagctatt 2081

tagatctccg gatttacatg cattaccctc atgttccctg aattctccca aaagtctctc 2141

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<210> 2
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 <213> Homo sapiens

<220>
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 <222> (2150)..(2150)
 <223> wherein "n" equals A, C, G, or T.

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Asn His His Ala Pro Pro Ala Ile Lys Ala Asn Gly Lys Asp Asp His
 20 25 30

Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp Asp Asp Thr Ser Ser
 35 40 45

Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro Gln Gln Gly Arg Ser
 50 55 60

Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile Ile Arg Glu Trp Ala
 65 70 75 80

Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe Leu Glu
 85 90 95

Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr Gln Glu Gly Asp

100

105

110

Gly Lys Gly Asp Lys Asp Gly Glu Asp Lys Gly Thr Lys Lys Lys Phe
115 120 125

Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Leu Tyr Tyr Cys Trp Leu
130 135 140

Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu Val Ala
145 150 155 160

Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr Tyr Leu Val Trp Leu
165 170 175

Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile Ala Asp Leu Phe Ile
180 185 190

Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys Asp Thr
195 200 205

Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys Leu Asp
210 215 220

Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val Asp Ile
225 230 235 240

His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala Arg Met
245 250 255

Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Asn Tyr Pro Asn Ile
260 265 270

Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile His Trp
275 280 285

Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile Gly Phe Gly Val
290 295 300

Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly Tyr Leu
305 310 315 320

Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr Leu Thr
325 330 335

Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr Leu Phe
340 345 350

Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr Ile Val
355 360 365

Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg Ala Glu
370 375 380

Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe Arg Lys
385 390 395 400

Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg Trp Phe Asp Tyr Leu
405 410 415

Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Ile Leu Lys Asn Leu
420 425 430

Pro Ala Lys Leu Arg Ala Glu Ile Ala Thr Asn Val His Leu Ser Thr
435 440 445

Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu Ala Gly Leu Leu Val
450 455 460

Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly Asp Tyr
465 470 475 480

Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile Lys Glu
485 490 495

Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr Ala Leu
500 505 510

Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn Ile Lys
515 520 525

Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser Leu Gly
530 535 540

Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu Ala Val
545 550 555 560

Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly Arg Glu
565 570 575

Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala Thr Ser
580 585 590

Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln Leu Glu Thr Asn Met
 595 600 605

Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu Ala Glu Tyr Thr Gly
 610 615 620

Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr Lys Met
 625 630 635 640

Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp Gly Met Asn Ser Pro
 645 650 655

Glu Leu Ala Ala Ala Asp Glu Pro
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<210> 13
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<223> Primer

<400> 13
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<210> 14
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<212> DNA
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<220>
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<212> PRT
<213> Oryctolagus cuniculus

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Trp Arg Arg Ser Ala Ala Thr Arg Arg Ser Arg Arg Cys Leu Lys Thr
20 25 30

Lys Arg Lys Arg Trp Ser Ser Gly Lys Gly Thr Pro Met Gln Ser Thr
35 40 45

Gln Cys Glu Thr Arg Arg Arg Ala Gln Thr Pro Cys Glu Ser Thr Gly
50 55 60

His	Thr	Trp	Arg	Met	Thr	Glu	Lys	Ser	Asn	Gly	Val	Lys	Ser	Ser	Pro	65	70	75	80
Ala	Asn	Asn	His	Asn	Asn	His	Val	Pro	Ala	Thr	Ile	Lys	Ala	Asn	Gly	85	90	95	
Lys	Asp	Glu	Ser	Arg	Thr	Arg	Ser	Arg	Pro	Gln	Ser	Ala	Ala	Asp	Asp	100	105	110	
Asp	Thr	Ser	Ser	Glu	Leu	Gln	Arg	Leu	Ala	Glu	Met	Asp	Ala	Pro	Gln	115	120	125	
Gln	Arg	Arg	Gly	Gly	Phe	Arg	Arg	Ile	Val	Arg	Leu	Val	Gly	Val	Ile	130	135	140	
Arg	Gln	Trp	Ala	Asn	Arg	Asn	Phe	Arg	Glu	Glu	Glu	Ala	Arg	Pro	Asp	145	150	155	160
Ser	Phe	Leu	Glu	Arg	Phe	Arg	Gly	Pro	Glu	Leu	Gln	Thr	Val	Thr	Thr	165	170	175	
Gln	Gln	Gly	Asp	Gly	Lys	Gly	Asp	Lys	Asp	Gly	Asp	Gly	Lys	Gly	Thr	180	185	190	
Lys	Lys	Lys	Phe	Glu	Leu	Phe	Val	Leu	Asp	Pro	Ala	Gly	Asp	Trp	Tyr	195	200	205	
Tyr	Arg	Trp	Leu	Phe	Val	Ile	Ala	Met	Pro	Val	Leu	Tyr	Asn	Trp	Cys	210	215	220	
Leu	Leu	Val	Ala	Arg	Ala	Cys	Phe	Ser	Asp	Leu	Gln	Arg	Gly	Tyr	Phe	225	230	235	240
Leu	Val	Trp	Leu	Val	Leu	Asp	Tyr	Phe	Ser	Asp	Val	Val	Tyr	Ile	Ala	245	250	255	
Asp	Leu	Phe	Ile	Arg	Leu	Arg	Thr	Gly	Phe	Leu	Glu	Gln	Gly	Leu	Leu	260	265	270	
Val	Lys	Asp	Pro	Lys	Lys	Leu	Arg	Asp	Asn	Tyr	Ile	His	Thr	Leu	Gln	275	280	285	
Phe	Lys	Leu	Asp	Val	Ala	Ser	Ile	Ile	Pro	Thr	Asp	Leu	Ile	Tyr	Phe	290	295	300	
Ala	Val	Gly	Ile	His	Asn	Pro	Glu	Leu	Arg	Phe	Asn	Arg	Leu	Leu	His	305	310	315	320
Phe	Ala	Arg	Met	Phe	Glu	Phe	Phe	Asp	Arg	Thr	Glu	Thr	Arg	Thr	Ser	325	330	335	
Tyr	Pro	Asn	Ile	Phe	Arg	Ile	Ser	Asn	Leu	Val	Leu	Tyr	Ile	Leu	Val	340	345	350	
Ile	Ile	His	Trp	Asn	Ala	Cys	Ile	Tyr	Tyr	Ala	Ile	Ser	Lys	Ser	Ile	355	360	365	
Gly	Phe	Gly	Val	Asp	Thr	Trp	Val	Tyr	Pro	Asn	Ile	Thr	Asp	Pro	Glu	370	375	380	

Tyr Gly Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr
 385 390 395 400
 Leu Thr Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu
 405 410 415
 Glu Tyr Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe
 420 425 430
 Ala Thr Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala
 435 440 445
 Thr Arg Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met
 450 455 460
 Gln Phe Arg Lys Val Ser Lys Glu Met Glu Ala Lys Val Ile Lys Trp
 465 470 475 480
 Phe Asp Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val
 485 490 495
 Leu Lys Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val
 500 505 510
 His Leu Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala
 515 520 525
 Gly Leu Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser
 530 535 540
 Pro Gly Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr
 545 550 555 560
 Ile Ile Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr
 565 570 575
 Gln Tyr Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile
 580 585 590
 Leu Asn Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile
 595 600 605
 Arg Ser Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu
 610 615 620
 Met Glu Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu
 625 630 635 640
 Arg Gly Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu
 645 650 655
 Val Ala Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Lys Gln Leu
 660 665 670
 Glu Thr Asn Met Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu Ala
 675 680 685
 Glu Tyr Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu
 690 695 700
 Glu Val Lys Met Lys Gln Asn Thr Glu Asp Asp Tyr Leu Ser Asp Gly

705

710

715

720

Met Asn Ser Pro Glu Pro Ala Ala Ala Glu Gln Pro
 725 730

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 <212> PRT
 <213> Bos taurus

<400> 16

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Asn His His Ala Pro Pro Ala Ile Lys Ala Ser Gly Lys Asp Asp His
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Arg Ala Ser Ser Arg Pro Gln Ser Ala Ala Ala Asp Asp Thr Ser Ser
 35 40 45

Glu Leu Gln Gln Leu Ala Glu Met Asp Ala Pro Gln Gln Arg Arg Gly
 50 55 60

Gly Phe Arg Arg Ile Ala Arg Leu Val Gly Val Leu Arg Glu Trp Ala
 65 70 75 80

Tyr Arg Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe Leu Glu
 85 90 95

Arg Phe Arg Gly Pro Glu Leu His Thr Val Thr Thr Gln Gln Gly Asp
 100 105 110

Gly Lys Gly Asp Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys Lys Phe
 115 120 125

Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg Trp Leu
 130 135 140

Phe Leu Ile Ala Leu Pro Val Leu Tyr Asn Trp Cys Leu Leu Val Ala
 145 150 155 160

Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr Tyr Ile Val Trp Leu
 165 170 175

Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile Ala Asp Leu Phe Ile
 180 185 190

Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys Asp Thr
 195 200 205

Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Met Gln Phe Lys Leu Asp
 210 215 220

Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val Gly Ile
 225 230 235 240

His Asn Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala Arg Met
 245 250 255

Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro Asn Ile

260										265					270						
Phe	Arg	Ile	Ser	Asn	Leu	Ile	Leu	Tyr	Ile	Leu	Ile	Ile	Ile	His	Trp						
		275						280					285								
Asn	Ala	Cys	Ile	Tyr	Tyr	Ala	Ile	Ser	Lys	Ser	Ile	Gly	Phe	Gly	Val						
	290					295					300										
Asp	Thr	Trp	Val	Tyr	Pro	Asn	Ile	Thr	Asp	Pro	Glu	Tyr	Gly	Tyr	Leu						
305					310					315					320						
Ser	Arg	Glu	Tyr	Ile	Tyr	Cys	Leu	Tyr	Trp	Ser	Thr	Leu	Thr	Leu	Thr						
			325						330					335							
Thr	Ile	Gly	Glu	Thr	Pro	Pro	Pro	Val	Lys	Asp	Glu	Glu	Tyr	Leu	Phe						
			340					345					350								
Val	Ile	Phe	Asp	Phe	Leu	Ile	Gly	Val	Leu	Ile	Phe	Ala	Thr	Ile	Val						
		355					360					365									
Gly	Asn	Val	Gly	Ser	Met	Ile	Ser	Asn	Met	Asn	Ala	Thr	Arg	Ala	Glu						
	370					375					380										
Phe	Gln	Ala	Lys	Ile	Asp	Ala	Val	Lys	His	Tyr	Met	Gln	Phe	Arg	Lys						
385					390					395					400						
Val	Ser	Lys	Glu	Met	Glu	Ala	Lys	Val	Ile	Arg	Trp	Phe	Asp	Tyr	Leu						
				405					410					415							
Trp	Thr	Asn	Lys	Lys	Ser	Val	Asp	Glu	Arg	Glu	Val	Leu	Lys	Asn	Leu						
			420					425					430								
Pro	Ala	Lys	Leu	Arg	Ala	Glu	Ile	Ala	Ile	Asn	Val	His	Leu	Ser	Thr						
		435					440					445									
Leu	Lys	Lys	Val	Arg	Ile	Phe	Gln	Asp	Cys	Glu	Ala	Gly	Leu	Leu	Val						
	450					455					460										
Glu	Leu	Val	Leu	Lys	Leu	Arg	Pro	Gln	Val	Phe	Ser	Pro	Gly	Asp	Tyr						
465					470					475					480						
Ile	Cys	Arg	Lys	Gly	Asp	Ile	Gly	Lys	Glu	Met	Tyr	Ile	Ile	Lys	Glu						
				485					490					495							
Gly	Lys	Leu	Ala	Val	Val	Ala	Asp	Asp	Gly	Val	Thr	Gln	Tyr	Ala	Leu						
			500					505					510								
Leu	Ser	Ala	Gly	Ser	Cys	Phe	Gly	Glu	Ile	Ser	Ile	Leu	Asn	Ile	Lys						
		515					520					525									
Gly	Ser	Lys	Met	Gly	Asn	Arg	Arg	Thr	Ala	Asn	Ile	Arg	Ser	Leu	Gly						
	530					535					540										
Tyr	Ser	Asp	Leu	Phe	Cys	Leu	Ser	Lys	Asp	Asp	Leu	Met	Glu	Ala	Val						
545					550					555					560						
Thr	Glu	Tyr	Pro	Asp	Ala	Lys	Arg	Val	Leu	Glu	Glu	Arg	Gly	Arg	Glu						
				565					570					575							
Ile	Leu	Met	Lys	Glu	Gly	Leu	Leu	Asp	Glu	Asn	Glu	Val	Ala	Ala	Ser						
		580						585					590								

Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr Asn Met
595 600 605

Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr Thr Gly
610 615 620

Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr Lys Met
625 630 635 640

Lys Gln Asn Asn Glu Asp Asp Ser Leu Ser Asp Gly Met Asn Ser Pro
645 650 655

Glu Pro Pro Ala Glu Lys Pro
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<210> 17
<211> 664
<212> PRT
<213> Mus musculus

<400> 17

Met Met Thr Glu Lys Ser Asn Gly Val Lys Ser Ser Pro Ala Asn Asn
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His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp
20 25 30

His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
35 40 45

Ser Ser Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
50 55 60

Arg Gly Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile Ile Arg Asp
65 70 75 80

Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
85 90 95

Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Pro His Gln
100 105 110

Gly Asp Gly Lys Gly Asp Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
115 120 125

Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
130 135 140

Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
145 150 155 160

Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
165 170 175

Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
180 185 190

Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
195 200 205

Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Gly Thr Ile Arg Ser
530 535 540

Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu
545 550 555 560

Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly
565 570 575

Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala
580 585 590

Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr
595 600 605

Asn Met Glu Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr
610 615 620

Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr
625 630 635 640

Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn
645 650 655

Thr Pro Glu Pro Ala Val Ala Glu
660

<210> 18

<211> 664

<212> PRT

<213> Rattus norvegicus

<400> 18

Met Met Thr Glu Lys Ser Asn Gly Val Lys Ser Ser Pro Ala Asn Asn
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His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp
20 25 30

His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
35 40 45

Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
50 55 60

Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp
65 70 75 80

Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
85 90 95

Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln
100 105 110

Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
115 120 125

Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
130 135 140

Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
 145 150 155 160
 Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
 165 170 175
 Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
 180 185 190
 Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
 195 200 205
 Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys
 210 215 220
 Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val
 225 230 235 240
 Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
 245 250 255
 Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro
 260 265 270
 Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile
 275 280 285
 His Trp Asn Ala Cys Ile Tyr Tyr Val Ile Ser Lys Ser Ile Gly Phe
 290 295 300
 Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly
 305 310 315 320
 Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr
 325 330 335
 Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr
 340 345 350
 Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr
 355 360 365
 Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg
 370 375 380
 Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe
 385 390 395 400
 Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp
 405 410 415
 Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys
 420 425 430
 Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu
 435 440 445
 Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala Gly Leu
 450 455 460
 Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly

465		470		475		480
Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile						
	485			490		495
Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr						
	500			505		510
Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn						
	515			520		525
Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser						
	530			535		540
Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu						
	545			550		555
Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly						
	565			570		575
Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala						
	580			585		590
Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr						
	595			600		605
Asn Met Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr						
	610			615		620
Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr						
	625			630		635
Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn						
	645			650		655
Thr Pro Glu Pro Thr Ala Ala Glu						
	660					

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39

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36

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gcagcagcgg ccgcatgacc gaaaaaacca atggtgtg 38

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gcagcagtcg acgaagacct gaggacggag tttcag 36

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<220>
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<222> (20)..(2011)

<400> 23
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Met Thr Glu Lys Thr Asn Gly Val Lys Ser Ser
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cca gcc aat aat cac aac cat cat gca cct cct gcc atc aag gcc aat 100
Pro Ala Asn Asn His Asn His His Ala Pro Pro Ala Ile Lys Ala Asn
15 20 25

ggc aaa gat gac cac agg aca agc agc agg cca cac tct gca gct gac 148
Gly Lys Asp Asp His Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp
30 35 40

gat gac acc tcc tca gaa ctg cag agg ctg gca gac gtg gat gcc cca 196
Asp Asp Thr Ser Ser Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro
45 50 55

cag cag gga agg agt ggc ttc cgc agg ata gtt cgc ctg gtg ggg atc 244
Gln Gln Gly Arg Ser Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile
60 65 70 75

atc aga gaa tgg gcc aac aag aat ttc cga gag gag gaa cct agg cct 292
Ile Arg Glu Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro
80 85 90

gac tca ttc ctc gag cgt ttt cgt ggg cct gaa ctc cag act gtg acc 340
Asp Ser Phe Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr
95 100 105

aca cag gag ggg gat ggc aaa ggc gac aag gat ggc gag gac aaa ggc 388
Thr Gln Glu Gly Asp Gly Lys Gly Asp Lys Asp Gly Glu Asp Lys Gly
110 115 120

acc aag aag aaa ttt gaa cta ttt gtc ttg gac cca gct ggg gat ttg 436
Thr Lys Lys Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Leu
125 130 135

tac tac tgc tgg cta ttt gtc att gcc atg ccc gtc ctt tac aac tgg 484
Tyr Tyr Cys Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp

140	145	150	155	
tgc ctg ctg gtg gcc aga gcc tgc ttc agt gac cta cag aaa ggc tac				532
Cys Leu Leu Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr	160	165	170	
tac ctg gtg tgg ctg gtg ctg gat tat gtc tca gat gtg gtc tac att				580
Tyr Leu Val Trp Leu Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile	175	180	185	
gcg gac ctc ttc atc cga ttg cgc aca ggt ttc ctg gag cag ggg ctg				628
Ala Asp Leu Phe Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu	190	195	200	
ctg gtc aaa gat acc aag aaa ctg cga gac aac tac atc cac acc ctg				676
Leu Val Lys Asp Thr Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu	205	210	215	
cag ttc aag ctg gat gtg gct tcc atc atc ccc act gac ctg atc tat				724
Gln Phe Lys Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr	220	225	230	235
ttt gct gtg gac atc cac agc cct gag gtg cgc ttc aac cgc ctg ctg				772
Phe Ala Val Asp Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu	240	245	250	
cac ttt gcc cgc atg ttt gag ttc ttt gac cgg aca gag aca cgc acc				820
His Phe Ala Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr	255	260	265	
aac tac cct aac atc ttc cgc atc agc aac ctt gtc ctc tac atc ttg				868
Asn Tyr Pro Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu	270	275	280	
gtc atc atc cac tgg aat gcc tgc atc tat tat gcc atc tcc aaa tcc				916
Val Ile Ile His Trp Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser	285	290	295	
ata ggc ttt ggg gtc gac acc tgg gtt tac cca aac atc act gac cct				964
Ile Gly Phe Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro	300	305	310	315
gag tat ggc tac ctg gct agg gaa tac atc tat tgc ctt tac tgg tcc				1012
Glu Tyr Gly Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser	320	325	330	
aca ctg act ctc act acc att ggg gag aca cca ccc cct gta aag gat				1060
Thr Leu Thr Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp	335	340	345	
gag gag tac cta ttt gtc atc ttt gac ttc ctg att ggc gtc ctc atc				1108
Glu Glu Tyr Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile	350	355	360	
ttt gcc acc atc gtg gga aat gtg ggc tcc atg atc tcc aac atg aat				1156
Phe Ala Thr Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn	365	370	375	
gcc acc cgg gca gag ttc cag gct aag atc gat gcc gtg aaa cac tac				1204
Ala Thr Arg Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr	380	385	390	395

atg cag ttc cga aag gtc agc aag ggg atg gaa gcc aag gtc att agg Met Gln Phe Arg Lys Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg 400 405 410	1252
tgg ttt gac tac ttg tgg acc aat aag aag aca gtg gat gag cga gaa Trp Phe Asp Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu 415 420 425	1300
att ctc aag aat ctg cca gcc aag ctc agg gct gag ata gcc atc aat Ile Leu Lys Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn 430 435 440	1348
gtc cac ttg tcc aca ctc aag aaa gtg cgc atc ttc cat gat tgt gag Val His Leu Ser Thr Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu 445 450 455	1396
gct ggc ctg ctg gta gag ctg gta ctg aaa ctc cgt cct cag gtc ttc Ala Gly Leu Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe 460 465 470 475	1444
agt cct ggg gat tac att tgc cgc aaa ggg gac atc ggc aag gag atg Ser Pro Gly Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met 480 485 490	1492
tac atc att aag gag ggc aaa ctg gca gtg gtg gct gat gat ggt gtg Tyr Ile Ile Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val 495 500 505	1540
act cag tat gct ctg ctg tgc gct gga agc tgc ttt ggc gag atc agt Thr Gln Tyr Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser 510 515 520	1588
atc ctt aac att aag ggc agt aaa atg ggc aat cga cgc aca gct aat Ile Leu Asn Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn 525 530 535	1636
atc cgc agc ctg ggc tac tca gat ctc ttc tgc ttg tcc aag gat gat Ile Arg Ser Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp 540 545 550 555	1684
ctt atg gaa gct gtg act gag tac cct gat gcc aag aaa gtc cta gaa Leu Met Glu Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu 560 565 570	1732
gag agg ggt cgg gag atc ctc atg aag gag gga ctg ctg gat gag aac Glu Arg Gly Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn 575 580 585	1780
gaa gtg gca acc agc atg gag gtc gac gtg cag gag aag cta ggg cag Glu Val Ala Thr Ser Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln 590 595 600	1828
ctg gag acc aac atg gaa acc ttg tac act cgc ttt ggc cgc ctg ctg Leu Glu Thr Asn Met Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu 605 610 615	1876
gct gag tac acg ggg gcc cag cag aag ctc aag cag cgc atc aca gtt Ala Glu Tyr Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val 620 625 630 635	1924

Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr Tyr Leu Val Trp Leu
165 170 175

Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile Ala Asp Leu Phe Ile
180 185 190

Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys Asp Thr
195 200 205

Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys Leu Asp
210 215 220

Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val Asp Ile
225 230 240

His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala Arg Met
245 250 255

Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Asn Tyr Pro Asn Ile
260 265 270

Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile His Trp
275 280 285

Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile Gly Phe Gly Val
290 295 300

Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly Tyr Leu
305 310 315 320

Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr Leu Thr
325 330 335

Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr Leu Phe
340 345 350

Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr Ile Val
355 360 365

Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg Ala Glu
370 375 380

Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe Arg Lys
385 390 395 400

Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg Trp Phe Asp Tyr Leu
405 410 415

Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Ile Leu Lys Asn Leu
420 425 430

Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu Ser Thr
435 440 445

Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu Ala Gly Leu Leu Val
450 455 460

Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly Asp Tyr
465 470 475 480

Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile Lys Glu
485 490 495

Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr Ala Leu
500 505 510

Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn Ile Lys
515 520 525

Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser Leu Gly
530 535 540

Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu Ala Val
545 550 555 560

Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly Arg Glu
565 570 575

Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala Thr Ser
580 585 590

Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln Leu Glu Thr Asn Met
595 600 605

Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu Ala Glu Tyr Thr Gly
610 615 620

Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr Lys Met
625 630 635 640

Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp Gly Met Asn Ser Pro

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Glu Leu Ala Ala Ala Asp Glu Pro
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